

CLAIMS:

1. A method for simultaneous communication over a bus coupling at least one master agent with at least one slave agent, the method on a master agent having an input and an

5 output to the bus comprising the steps of:

determining if there is data from the master, and if there is data from the master then performing the sub-steps of:

testing if the data from the bus is a token;

10 if the data from the bus is a token, then moving the data from the master to the bus and discarding the token from the bus; and

if the data is not a token from the bus, then moving the data from the input of the bus to the output of the bus;

wherein if the data is not from the master and the data is from the bus, then moving the data from the input of the bus to the output of the bus.

2. The method according to claim 1, further comprising the step of:

determining if there is data from the bus or if there is data from the master.

3. The method according to claim 2, further comprising the step of:

20 determining if there is no data on the output or if an advance line is asserted and if there is no data on the output or an advance line is asserted then performing the step of determining if there is data from the bus or if there is data from the master.

4. The method according to claim 1, further comprising the step of:

25 determining if the master agent is coupled to an access macro and if the master agent is coupled to an access macro, then when the bus is initialized performing the step of placing tokens on the bus, where the maximum number of tokens on the bus is set equal to a total number of master agents plus the total number of slave agents less one.

5. A method for simultaneous communication over a bus which couples at least one master agent with at least one slave agent, the method on a slave agent having an input and an output to the bus comprising the steps of:

determining if there is data from the bus or from the slave and if there is data from the bus but not from the slave then moving the data from the bus to the output and if there is data from the slave but not the bus then moving the data from the slave to the output;

determining if there is data both from the bus and the slave and if there is data from both the bus and the slave then performing the sub-steps of:

if the bus has priority then moving the data from the bus to the output and setting the priority to the slave; and

if the bus does not have priority then moving the data from the slave to the output and setting the priority to the bus.

6. The method according to claim 5, further comprising the step of:
determining if there is data from the bus or if there is data from the slave.

7. The method according to claim 6, further comprising the step of:
determining if there is no data on output or if an advance line is asserted and if there is no data on output or an advance line is asserted then performing the step of
determining if there is data from the bus or if there is data from the slave.

receiving a reset command;

5 determining after being reset if the master agent is coupled to an access macro and
if the master agent is coupled to the access macro then placing n-1 tokens on the bus,
where n is the total number of master agents and slave agents communicating on the bus.

9. A data communications network for simultaneous communications between two or more agents comprising:

at least one agent designated as a slave agent coupled to a communications bus;

at least one agent designated as a master agent coupled to the communications bus;

an interface to the master agent with an input from the bus and an output to the bus, the interface comprising a plurality of latches for testing if there is data, and if there is data from the master then testing if the data from the bus is a token;

if the data from the bus is a token, then moving the data from the master to the bus and discarding the token; and

if the data is not a token from the bus, then moving the data from the input of the bus to the output of the bus;

wherein if the data is not from the master and the data is from the bus, then moving the data from the input of the bus to the output of the bus.

10. The data communications network according to claim 9 further comprising:
an interface on each slave agent with an input to the bus and an output to the bus,
the interface comprising a plurality of latches for testing if there is data from the bus or
from the slave agent and if there is data from the bus but not from the slave then moving
the data from the bus to the output and if there is data from the slave but not from the bus
then moving the data from the slave to the output;

wherein the plurality of latches tests if there is data both from the bus and data from
the slave and if there is data from both the bus and from the slave then testing if the bus
has priority and:

if the bus has priority then moving the data from the bus to the output and
setting the priority to the slave; and

if the bus does not have priority then moving the data from the slave to the
output and setting the priority to the bus.

11. The data communications network, according to claim 10, wherein the data further
includes control, data and parity data.

12. The data communications network, according to claim 10, wherein at least one of
the communication agents is coupled to a first brand of computer and at least one of the
communications agents is coupled to a second brand of computer so as to form a
heterogeneous environment.

13. The data communications network, according to claim 10, wherein the bus is
selected from a group of buses consisting of wire, wireless and infrared.

14. The data communications network, according to claim 9, wherein the slave agent
includes:

an interface with an input from the bus and an output to the bus, the interface
comprising a plurality of latches for testing if the data is for the slave agent and if the data
is for the slave agent then transferring the data to the slave.

15. The data communications network, according to claim 9, wherein the interface to the master agent further comprises a plurality of latches for testing if the data is for the master agent and if the data is for the master agent, then passing the data to the master.

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16. A computer readable medium containing programming instructions for simultaneous communication over a bus coupling at least one master agent with at least one slave agent, the method on a master agent having an input and an output to the bus, the programming instructions comprising:

5 receiving a reset command;

determining after being reset if the master agent is coupled to an access macro and if the master agent is coupled to the access macro then placing $n-1$ tokens on the bus, where n is the total number of master agent agents and slave agents communication on the bus.

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5 the programming instructions comprising:

testing if the data from the input is a token;

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if the data from the bus is not a token, then moving the data from the input of the bus to the output of the bus;

wherein if the data is not from the master and the data is from the bus, then moving the data from the input of the bus to the output of the bus.